

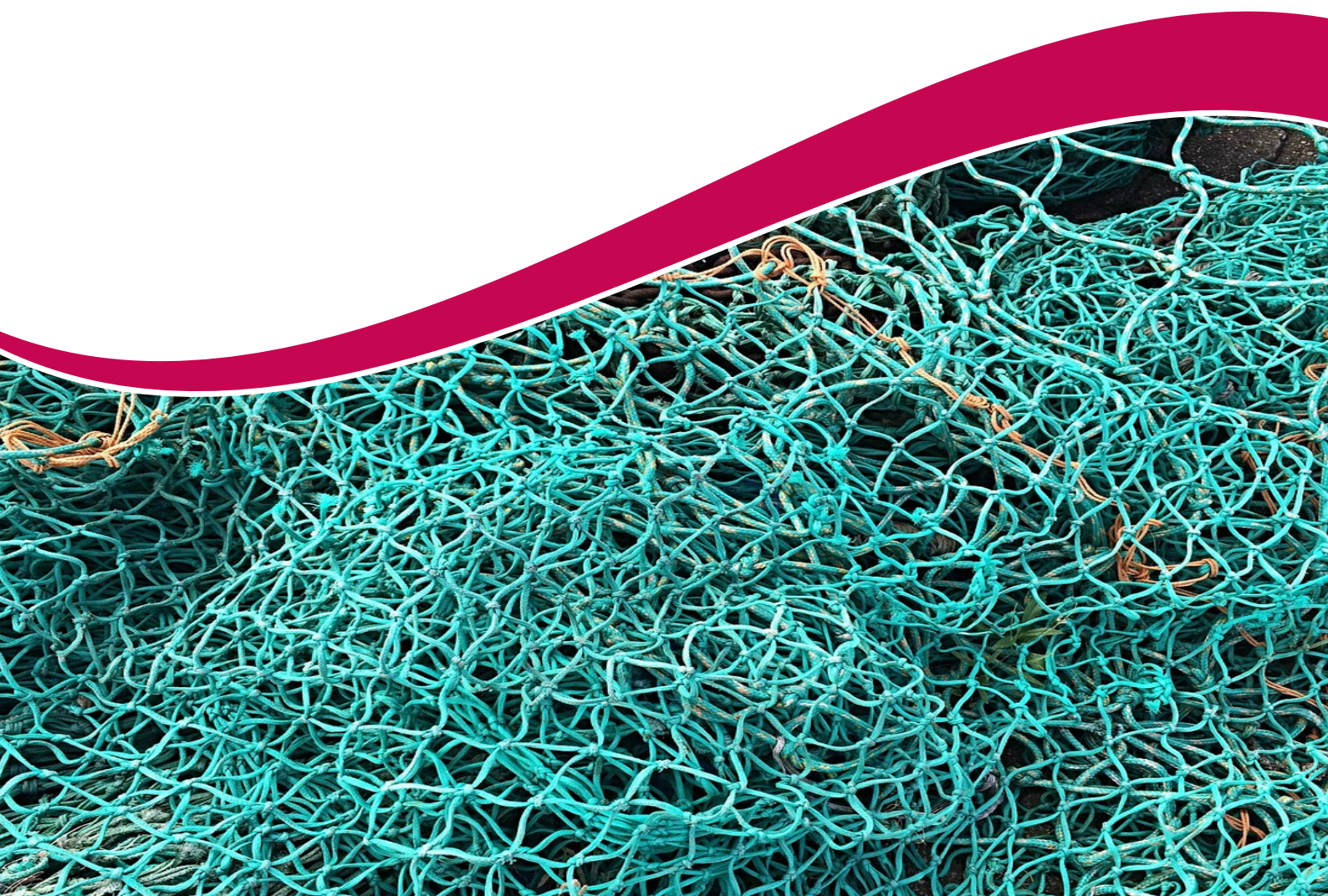


Australian Government

Australian Fisheries Management Authority

Northern Prawn Fishery

**Five-year strategic research plan
2024-28**



Contents

| | | |
|-----|---|----|
| 1 | Introduction..... | 3 |
| 2 | Overview of the Northern Prawn Fishery | 3 |
| 3 | Research framework..... | 5 |
| 3.1 | <i>Roles</i> | 5 |
| 3.2 | <i>The research process</i> | 6 |
| 4 | AFMA Strategic Research Plan | 6 |
| 4.1 | <i>Program 1 – Fishery stocks, biology and the marine environment</i> | 6 |
| 4.2 | <i>Program 2 – Development</i> | 7 |
| 4.3 | <i>Program 3 – Evaluation</i> | 7 |
| 5 | NPF research priorities 2024-28 | 7 |
| 6 | Acronyms | 10 |
| | Appendix 1: proposed sequencing of at sea monitoring and research and development | 11 |

1 Introduction

The *Fisheries Administration Act 1991* provides that AFMA is to establish priorities in respect of research relating to fisheries and arrange for the undertaking of such research. This is supported by the *Northern Prawn Fishery Management Plan 1995* (Management Plan) measures by which the objectives of the plan are to be attained includes promoting relevant research.

Research, Development and Extension (RD&E) is pivotal to the management of the Northern Prawn Fishery (NPF), with a long history of research underpinning its management. The sustainable management of the NPF was recognised through recertification of the fishery by the Marine Stewardship Council (MSC) in 2023, reaffirming the importance of detailed and robust RD&E and monitoring programs to ensure that this certification is maintained.

This *Northern Prawn Fishery Five Year Strategic Research Plan 2024-28* (Strategic Research Plan) identifies the research priorities for the fishery over the next five years to:

- a. assist with the pursuit of the management objectives for the NPF, which are consistent with AFMA's objectives; and
- b. enable the effective implementation and appraisal of management arrangements.

This Strategic Research Plan summarises the priorities for RD&E investment for the NPF for the period 2024-28. Long-term, this Plan seeks to inform a balanced investment portfolio across the environment, development, social and economic research, and extension relevant to end-users.

This Strategic Research Plan and annual research statements are used by:

- a. the AFMA Research Committee (ARC) at its annual November meeting to develop the ARC annual research call made in early December;
- b. the ARC to recommend priorities for potential Fisheries Research and Development Committee (FRDC) funding; and
- c. FRDC in making its annual call for research expressions of interest each year.

2 Overview of the Northern Prawn Fishery

The NPF extends from Cape York in Queensland to Cape Londonderry in Western Australia and encompasses some 770 000 km² of Australia's productive northern waters. The NPF is also Australia's most valuable Commonwealth-managed fishery, with annual catches in recent years ranging between 4 000-7 000 t worth between \$100 - 125 million per annum. The fishery operates in both Commonwealth and state/territory waters under different Offshore Constitutional Settlement arrangements with state/territory governments.

There are 52 NPF operators that target commercial species of prawns including White Banana (*Penaeus merguensis*), Redleg Banana (*P. indicus*), Brown Tiger (*P. esculentus*), Grooved Tiger (*P. semisulcatus*), Blue Endeavour (*Metapenaeus endeavouri*), Red Endeavour (*M. ensis*) King Prawns (*Melicertus* sp.) and Leader Prawns or Black Tigers (*P. monodon*). Scampi, squid, scallops, bugs and some fish are taken in both the

banana prawn and the tiger prawn fisheries as byproduct. White banana prawns and tiger prawns dominate the catch.

NPF operators deploy a variety of measures to reduce interactions with bycatch species (species not retained), and fishers and researchers are regularly trialling innovative new approaches to further reduce bycatch levels.

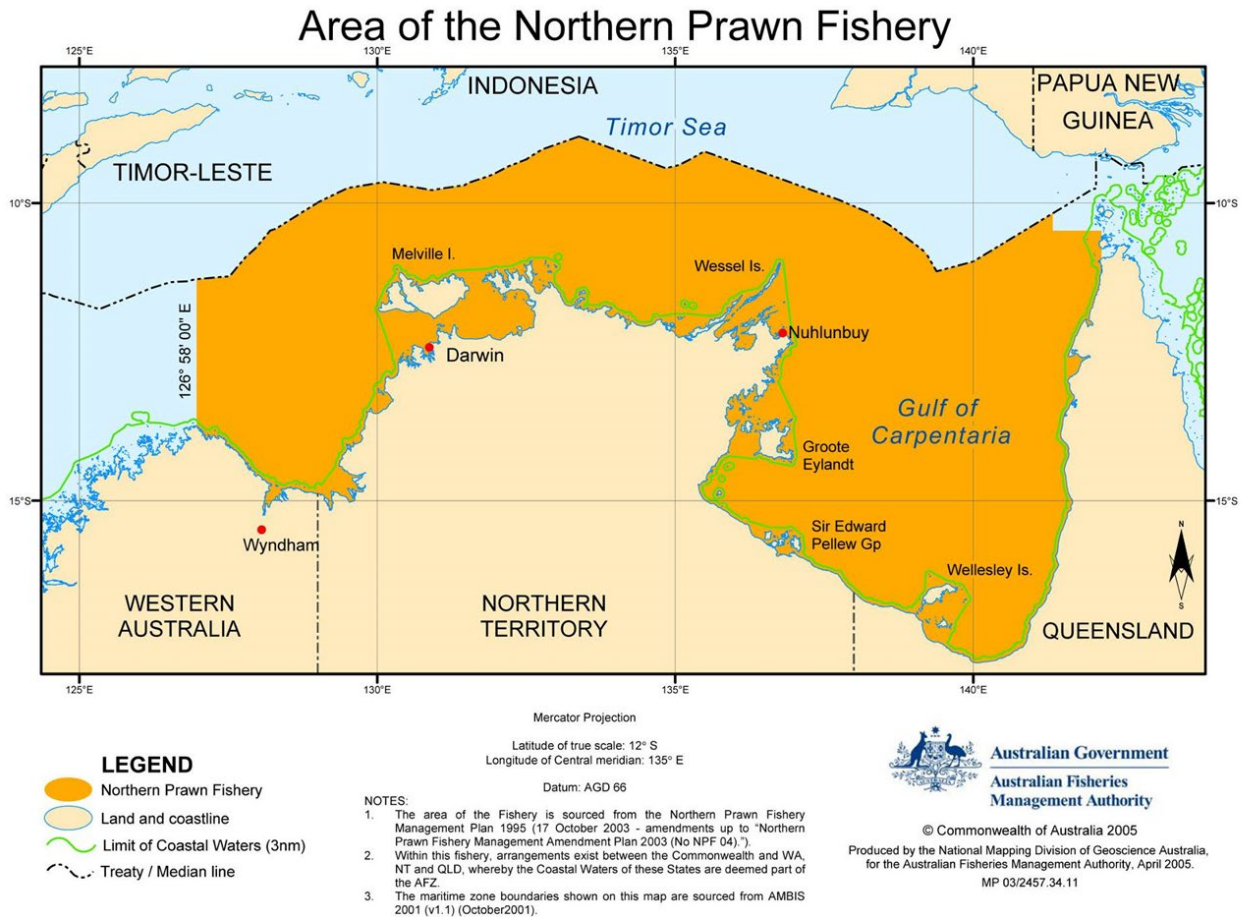


Figure. 1: Area of the Northern Prawn Fishery (indicative map only)

Further information on the NPF is available in the latest NPF Directions and Closures Booklet, available on the AFMA website at: <https://www.afma.gov.au/commercial-fishers/management-arrangements/management-booklets>.

3 Research framework

3.1 Roles

3.1.1 Resource Assessment Groups

The main function of resource assessment groups (RAG), including the Northern Prawn RAG (NPRAG), is to peer review scientific data and information and provide advice to AFMA on the status of fish stocks, sub-stocks, species (target and non-target species) and the impact of fishing on the marine environment.

3.1.2 Management Advisory Committees

Management Advisory Committees (MACs) are the main advisory bodies to AFMA. They provide advice on a variety of issues including fisheries management arrangements, research, compliance, and management costs. The MACs provide a link between AFMA and those with an interest in the fishery with members from commercial industry, fisheries management, the scientific community, the recreational sector, the environment/conservation sector and, in some instances, state governments.

MACs provide a broad perspective on management options and are a forum where issues relating to a fishery are discussed, problems identified, and possible solutions developed. The MACs consider the advice of RAGs and provide recommendations to the AFMA Commission based on how the options will contribute to meeting the overall objectives for a particular fishery and the pursuit of AFMA's legislative objectives. The NPF MAC (NORMAC) provides advice on management matters relevant to the NPF.

3.1.3 AFMA Research Committee

The ARC considers essential research priorities that contribute to improved management for fisheries. As part of its role the committee also:

- d. develops research priorities for Commonwealth fisheries in conjunction with MACs that are consistent with AFMA's management needs and objectives specified in the *Fisheries Administration Act 1991* and *Fisheries Management Act 1991*;
- e. approves five-year fishery research plans for individual fisheries managed by AFMA;
- f. advises the AFMA Commission on the allocation of AFMA research funds and accounts and reports against their use;
- g. monitors biological and economic indicators in Commonwealth fisheries, with an emphasis on sustainability indicators and economic efficiency; and,
- h. liaise with research providers and funding agencies to make sure AFMA's research priorities are given appropriate weight in the wider allocation of research funds.

The ARC now has a more strategic role in providing strategic advice to the AFMA Commission:

- i. on major fishery and cross fishery research issues affecting Commonwealth fisheries to support AFMA in meeting its objectives and other legislative requirements;
- j. on the strategic directions for research relevant to AFMA's information needs; and

- k. recommending research priorities and projects for potential FRDC funding.

3.1.4 Fisheries Research and Development Corporation

The FRDC is a co-funded partnership between its two stakeholders, the Australian Government and the fishing industry.

The FRDC's role is to plan and invest in fisheries research, development and extension (RD&E) activities in Australia. This includes providing leadership and coordination of the monitoring, evaluating and reporting on RD&E activities, facilitating dissemination, extension and commercialisation. The FRDC achieves this through coordinating government and industry investment, including stakeholders to establish and address RD&E priorities. In addition, the FRDC monitors and evaluates the adoption of RD&E to inform future decisions.

In July 2020 the FRDC released its [Fisheries Research and Development Corporation R&D Plan 2020-2025](#). This plan outlines FRDC investment that will be targeted to achieve five outcomes:

1. Growth for enduring prosperity
2. Best practices and production systems
3. A culture that is inclusive and forward thinking
4. Fair and secure access to aquatic resources
5. Community trust, respect and value.

FRDC is currently updating the process for identifying, assessing and funding priorities; details are available on their website: frdc.com.au.

3.2 The research process

For information on prioritising research, calling for and assessing proposal, please view the research timeline at: <https://www.afma.gov.au/afmas-research/advice-researchers>.

4 AFMA Strategic Research Plan

AFMA has three research programs, which are directed to pursuing AFMA's legislative objectives. These support the NPF research priorities and are listed below.

4.1 Program 1 – Fishery stocks, biology and the marine environment

- a. Collect appropriate information to support stock assessments.
- b. Explore alternative species assessment methods and models.
- c. Assess the impacts of fishing on non-target species and the marine environment.

4.2 Program 2 – Development

- a. Bycatch Reduction and development of underutilised fisheries resources.
- b. Take account of Indigenous, commercial, and recreational interests.
- c. Develop coordinated approach on major fishery and cross fishery economic issues.
- d. Improve and enhance fishery Harvest Strategies and Management framework.
- e. Management development.
- f. Compliance methodologies.

4.3 Program 3 – Evaluation

- a. Management indicators.

For further information on AFMA’s research programs is available on the AFMA website at:

<https://www.afma.gov.au/research/afmas-five-year-strategic-research-plan-2023-28>.

5 NPF research priorities 2024-28

The research priorities listed below for the NPF have been developed to ensure that there is adaptive management to future proof the fishery. This is particularly important given climate-driven changes, emerging government policies (e.g. carbon net zero) and other external influences impacting fishery profitability (e.g. fuel price, markets) that will require an adaptive approach to research and management.

Other considerations that will be important within the timeframe of this strategic research plan include:

- fleet dynamics, particularly given the multispecies nature of the fishery;
- new and emerging technologies; and
- the finalisation and implementation of a new multi species harvest strategy.

While the research priorities identified below are presented under the three research programs under the AFMA Strategic Research Plan, many are cross-cutting and may benefit the fishery more broadly.

Table 1: Research priorities for the NPF

| Theme | Idea | 2024 – 28 R&D Priorities |
|---|--|---|
| Fish stocks, biology, and the marine environment | | |
| Fisheries | Research into the implications of tiger prawn fishing in the banana prawn season | Undertake research to better understand the sustainability and profitability of the tiger prawn fishery including spatial research, understanding the economics of specific areas and the influence of fishing for tiger prawns during the banana prawn season. |
| Fisheries | Accounting for spatial structure on assessment of tiger prawns | Research the spatial structure of tiger prawns and update the stock assessment model to determine if the inclusion of more defined spatial data improves the assessment. |
| Fisheries | Review and improvement of the tiger prawn stock assessment/model | Continuous review and improvement of the tiger prawn assessment is important, including: <ul style="list-style-type: none"> • inclusion of climate change and spatial productivity indicators, • reformulation of the model to a catch conditioned model, • integrating other prawn species into the bio-economic model, and • improvements to the prawn trawl performance model. |
| Fisheries | Develop a banana prawn stock assessment model | Using relevant research undertaken to date, develop a stock assessment model for banana prawns which relevant environmental indicators (e.g. river flows). |
| Fisheries | Utilisation of available data to support spatial considerations in the fishery | Exploration of how available spatial data (e.g. VMS, IMP) could be used to support finer scale spatial assessment and/or management in the NPF. |
| Bycatch/Protected Species | Understanding risks to sawfish | Collaborate with relevant stakeholders to undertake research on sawfish including: <ul style="list-style-type: none"> • population dynamics, • understanding the nature of sawfish interactions, • mitigate risks to sawfish through reduce interactions and improve escapement, and • improving available species level data (e.g. logbook reporting). |
| Environment | Understanding of the river flow and terrestrial development impacts in the fishery | Improve understanding of how river flow (including altered flow regimes), land-based developments and terrestrial environmental changes impact prawn stocks and identification of potential alternative proxies for river flow (e.g. rainfall). |
| Environment | Impacts of climate change | Continue research to identify the potential impacts of climate change on key NPF stocks and the global supply chain and investigate options for the fishery to adapt to these changes. |

| Theme | Idea | 2024 – 28 R&D Priorities |
|----------------------------|---|---|
| Environment | Reducing carbon footprint | Explore options for alternative fuel sources and strategies to move towards carbon net zero |
| Monitoring/Data collection | Ensuring data collection across the fishery remains fit for purpose into the future, including the independent monitoring surveys | Given the priority of data for use in the NPF, it is important that data collection programs remain effective for future years, including: <ul style="list-style-type: none"> • undertaking a cross calibration for the IMP survey going forward so modern standards for protecting bycatch could be implemented, • consideration of the implications of running the surveys annually or biennially, and • include the use of Artificial Intelligence and the use of machine learning. |
| Monitoring/Data collection | Investigation of new monitoring options available to support reliable and efficient data collection | Explore the benefits of new monitoring technology, including electronic monitoring, e.g. on-board cameras, environmental data sensors and vessel monitoring systems, and their potential value to the NPF (e.g. improved confidence in bycatch and TEP data, cost effective data collection, targeted training). |
| External Accreditation | Maintain required management, monitoring and assessment standards to retain current NPF accreditations | Maintain up to date information and high-quality data to ensure the NPF continues to meet the MSC standards and <i>Environment Protection and Biodiversity Conservation Act 1999</i> WTO export requirements. |
| Development | | |
| Bycatch/Protected Species | Testing of Bycatch Reduction Devices | Continue to explore ways to test the effectiveness of BRDs at reducing unwanted catch. E.g. modelling, flume tank testing. |
| Technology | Strengthen supply chain resilience | Research ways to strengthen supply chain resilience including aspects related to quality, traceability, temperature monitoring, climate change, trade/market disruptions and electronic communication. |
| Profitability | Improve operational efficiency of the fleet | Continue to explore methods to improve profitability, reduce operational costs and increase revenue in the NPF. |
| Careers | Attracting and retaining crew | Collaborate with other fisheries sectors and resource industries to identify ways to attract and retain crew. |
| Indigenous | Strengthen Indigenous engagement | Understanding and overcoming barriers in collaborating with First Nation peoples and ways to improve communication, collaboration and engagement with First Nationals people in the NPF. |
| Other | Improving social licence in the fishery | Expanding on previous initiatives undertaken, explore options to promote the existing changes and improvements (and those that continue to be made) to ensure the NPF remains sustainable. |

6 Acronyms

| | |
|----------|--|
| AFMA | Australian Fisheries Management Authority |
| NPF | Northern Prawn Fishery |
| RAG | Resource Assessment Group |
| MAC | Management Advisory Committee |
| NORMAC | Northern Prawn Management Advisory Committee |
| NPRAG | Northern Prawn Fishery Resource Assessment Group |
| TAE | Total allowable effort |
| SFR | Statutory Fishing Right |
| GVP | Gross Value of Production |
| R&D | Research and Development |
| HSF | Harvest Strategy Framework |
| IMP | Independent Monitoring Program |
| ERA | Ecological risk assessment |
| ERM | Ecological risk management |
| TEP | Threatened, endangered and protected |
| EPBC Act | <i>Environmental Protection and Biodiversity Conservation Act 1999</i> |
| FRDC | Fisheries Research Development Corporation |
| ARC | AFMA Research Committee |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |

Appendix 1: proposed sequencing of at sea monitoring and research and development

Priority: H – High, M – Medium L – Low

Table 2: At sea monitoring activities (relevant to Program 1 – Fishery stocks, biology and the marine environment)

| Assessment | Need | 2024 | 2025 | 2026 | 2027 | 2028 | Priority | Potential funding source |
|--|---|------|------|------|------|------|----------|--------------------------|
| Recruitment Surveys (January/February) | Provide key data for input to the assessments that are used to set TAEs | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA |
| Spawning surveys (July) | Provide key data for input to the assessments that are used to set TAEs | ✓ | | ✓ | | ✓ | H | AFMA |
| CMO Program | Cost effectively provide key data on TEP and at-risk species, and total bycatch estimates | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA |
| CMO Program Analysis | Annual analysis of Crew Member Observer (CMO) and Scientific Observer data to confirm it meets criteria for use in monitoring populations of TEP and at-risk species, with sustainability assessment every third year | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA |
| Bycatch Monitoring Program | Provide an independent data on TEP species, bycatch species composition and reproductive staging of target species | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA |

Table 3: Proposed sequencing of R&D to address priorities identified

| R&D need | 2024 | 2025 | 2026 | 2027 | 2028 | Priority | Potential funding source | Program area (refer to Section 4) |
|--|------|------|------|------|------|----------|---|-----------------------------------|
| 1. NPRAG assessments: To set the Total Allowable Effort (TAE) for the NPF tiger prawn fishery (including endeavour prawns) in accordance with the NPF Harvest Strategy | ✓ | | ✓ | | ✓ | H | AFMA | 1a |
| 2. NPRAG assessments: To set the Total Allowable Effort (TAE) for the redleg banana prawn fishery in accordance with the NPF Harvest Strategy | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA | 1a |
| 3. NPRAG assessments: To set the Total Allowable Effort (TAE) for the <i>P. monodon</i> (broodstock) fishery in accordance with the NPF Harvest Strategy | | | | | ✓ | H | AFMA | 1a |
| 4. NPRAG MEY assessments: to ensure that there is an appropriate MEY trigger set for the banana prawn fishery in accordance with the NPF Harvest Strategy | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA | 1a |
| 5. Annual analysis of Crew Member Observer (CMO) and Scientific Observer data to confirm it meets criteria for use in monitoring populations of TEP and at-risk species, with sustainability assessment every third year | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA | 1c |
| 6. Improve understanding of how river flow (including altered flow regimes), land-based developments and terrestrial environmental changes impact prawn stocks and identification of potential alternative proxies for river flow (e.g. rainfall). | ✓ | ✓ | ✓ | ✓ | ✓ | H | CSIRO/FRDC – work underway through Tiger MICE project and projects funded through national water grid | 1b, 2c, 2d |
| 7. Continue research to identify the potential impacts of climate change on key NPF stocks and the global supply chain and investigate options for the fishery to adapt to these changes. | ✓ | ✓ | ✓ | ✓ | ✓ | H | FRDC | 1b, 1c, 2d |
| 8. Collaborate with relevant stakeholders to undertake research on sawfish including: <ul style="list-style-type: none"> • population dynamics, • understanding the nature of sawfish interactions, • mitigate risks to sawfish through reduce interactions and improve escapement, and • improving available species level data (e.g. logbook reporting). | ✓ | ✓ | ✓ | ✓ | ✓ | H | FRDC/ AFMA/ NPFI/ Parks Aust./CSIRO | 1c |

| R&D need | 2024 | 2025 | 2026 | 2027 | 2028 | Priority | Potential funding source | Program area (refer to Section 4) |
|--|------|------|------|------|------|----------|--|-----------------------------------|
| 9. Maintain up to date information and high-quality data to ensure the NPF continues to meet the MSC standards and <i>Environment Protection and Biodiversity Conservation Act 1999</i> WTO export requirements. | ✓ | ✓ | ✓ | ✓ | ✓ | H | AFMA/NPFI/CSIRO | 1a, 3a |
| 10. Research the spatial structure of tiger prawns and update the stock assessment model to determine if the inclusion of more defined spatial data improves the assessment. | ✓ | ✓ | ✓ | | | H | AFMA/CSIRO/FRDC – current funding through Tiger MICE project | 1b, 2d |
| 11. Continue to explore methods to improve profitability, reduce operational costs and increase revenue in the NPF. | ✓ | ✓ | ✓ | ✓ | ✓ | H | Industry | 2c |
| 12. Undertake research to better understand the sustainability and profitability of the tiger prawn fishery including spatial research, understanding the economics of specific areas and the influence of fishing for tiger prawns during the banana prawn season. | | | | ✓ | ✓ | M | CSIRO/FRDC | 1b, 3a |
| 13. Explore options for alternative fuel sources and strategies to move towards carbon net zero | | | | | | M | FRDC/Industry | 2c |
| 14. Research ways to strengthen supply chain resilience including aspects related to quality, traceability, temperature monitoring, climate change, trade/market disruptions and electronic communication. | | | | | | M | Industry – ongoing work in this area | 2c |
| 15. Continue to explore ways to test the effectiveness of BRDs at reducing unwanted catch. E.g. modelling, flume tank testing. | ✓ | ✓ | ✓ | ✓ | ✓ | M | Industry – ongoing work in this area | 1c |
| 16. Explore the benefits of new monitoring technology, including electronic monitoring, e.g. on-board cameras, environmental data sensors and vessel monitoring systems, and their potential value to the NPF (e.g. improved confidence in bycatch and TEP data, cost effective data collection, targeted training). | ✓ | ✓ | | | | M | AFMA/Industry/IMOS | 1a, 2e, 2f |
| 17. Collaborate with other fisheries sectors and resource industries to identify ways to attract and retain crew. | ✓ | ✓ | ✓ | ✓ | ✓ | L | Industry | 2c |



= Proposed timing for delivery



= Project work



= Areas of research